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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,663	07/15/2004	Giovanni Arvedi	1029.1019	2342
20311 LUCAS & ME	7590 03/26/2007 RCANTI LLP		EXAMINER KERNS, KEVIN P ART UNIT PAPER NUMBER	
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SHORTENED STATUTOR	RY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE	
3 MO	NTHS	03/26/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

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		Application No.	Applicant(s)			
		10/501,663	ARVEDI, GIOVANNI			
	Office Action Summary	Examiner	Art Unit			
	·	Kevin P. Kerns	1725			
Period fo	The MAILING DATE of this communication app or Reply	pears on the cover sheet with the	correspondence address			
WHIC - Exte after - If NC - Failu Any	ORTENED STATUTORY PERIOD FOR REPLY CHEVER IS LONGER, FROM THE MAILING DANSIONS of time may be available under the provisions of 37 CFR 1.13 SIX (6) MONTHS from the mailing date of this communication. Depriod for reply is specified above, the maximum statutory period were to reply within the set or extended period for reply will, by statute, reply received by the Office later than three months after the mailing ed patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS COMMUNICATIO 36(a). In no event, however, may a reply be ti vill apply and will expire SIX (6) MONTHS from , cause the application to become ABANDONI	N. mely filed n the mailing date of this communication ED (35 U.S.C. § 133).			
Status						
1)	Responsive to communication(s) filed on 15 Ju	ılv 2004.				
2a)□						
3)						
	closed in accordance with the practice under E	x parte Quayle, 1935 C.D. 11, 4	53 O.G. 213.			
Dispositi	ion of Claims					
5)□ 6)⊠ 7)⊠	Claim(s) <u>1-24</u> is/are pending in the application. 4a) Of the above claim(s) is/are withdray Claim(s) is/are allowed. Claim(s) <u>1-24</u> is/are rejected. Claim(s) <u>1,4,6,8,12,13,20 and 23</u> is/are objecte Claim(s) are subject to restriction and/or	vn from consideration.	·			
Applicati	ion Papers					
9)⊠ 10)⊠	The specification is objected to by the Examiner The drawing(s) filed on 15 July 2004 is/are: a)[Applicant may not request that any objection to the Replacement drawing sheet(s) including the correction of the oath or declaration is objected to by the Ex	☐ accepted or b) ☐ objected to drawing(s) be held in abeyance. Se ion is required if the drawing(s) is ob	ee 37 CFR 1.85(a). Djected to. See 37 CFR 1.121(d	d).		
Priority ι	under 35 U.S.C. § 119					
12)⊠ a)l	Acknowledgment is made of a claim for foreign All b) Some * c) None of: 1. Certified copies of the priority documents 2. Certified copies of the priority documents 3. Copies of the certified copies of the prior application from the International Bureau See the attached detailed Office action for a list of	s have been received. s have been received in Applicat rity documents have been receiv I (PCT Rule 17.2(a)).	ion No ed in this National Stage			
2) 🔲 Notic 3) 🔯 Inforr	t(s) te of References Cited (PTO-892) te of Draftsperson's Patent Drawing Review (PTO-948) mation Disclosure Statement(s) (PTO/SB/08) or No(s)/Mail Date 7/15/04.	4) Interview Summary Paper No(s)/Mail D 5) Notice of Informal I 6) Other:	eate			

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DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "7.1" (Figure 1a); and "L₁" (Figure 1b). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In this instance, the abstract is not on a separate page (currently written only on the front page of the corresponding WIPO document), and includes the legal term "comprising". In addition, it is unclear what is meant by "36 six passes".

3. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (I) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

In this instance, the specification lacks section headings.

4. The disclosure is objected to because of the following informalities: on page 2, 8th line, replace "Object" with "An object". On page 2, 22nd and 23rd lines, the clause "which are defined in the independent claims 1 and 13." should be deleted, as claim numbering often changes during application prosecution. On page 3, 19th line, replace "5.3" with "2.3" to be in agreement with "slab side 2.3" of Figure 1a. On page 3, 22nd line, replace "continuos" with "continuous". On page 4, 1st line, delete "a" after "and". On page 6, last line, it is believed that "350 m" should be replaced with a shorter dimension. On page 7, 25th line, insert "(see Figure 2)" after "14.1", as the "T.T.T. diagram" has not been described in either of Figures 1a and 1b. On page 10, 10th line, replace "13.1" with "13" to be in agreement with Figure 1b. On page 13, 3rd line, delete "2.3" after "casting speed", as "2.3" is a "slab side" in Figure 1a. Corrections and/or clarifications are required for these and other errors that occur throughout the specification.

Claim Objections

5. Claims 1, 4, 6, 8, 12, 13, 20, and 23 are objected to because of the following informalities: in claim 1, 9th and 10th lines, replace "0,5 and 5,0" with "0.5 and 5.0". In claim 1, 11th line, delete "the" before "solidification" to obtain proper antecedent basis. In claim 1, 15th line, replace "3.0liters" with "3.0 liters". In claim 1, 16th line, replace "theslab" with "slab" to obtain proper antecedent basis. In claim 1, 19th line, it is believed that "(5)" should be deleted after "roughing". In claim 4, 2nd line, insert "," after "strip". In claims 6 and 8, 1st line of both claims, replace "claim1" with "claim 1". In claim

8, 2nd line, insert "," after "step". In claim 12, 2nd line, delete either "characterized by" or "comprising". In claim 13, 1st line, it is suggested to insert "continuous casting" before "machine" to obtain proper antecedent basis throughout claims 13 and 14. In claim 13, 2nd line, replace "with" with "width" after "mould". In claim 13, 4th line, replace "as" with "that". In claim 13, 12th line, delete "the" before "solidification" to obtain proper antecedent basis. In claim 13, 14th line, delete either "the" or "said" before "roller table". In claim 13, 14th line, replace "the" with "a" before "casting speed". In claim 13, 17th line, delete either "the" or "said" before "casting". In claim 13, 19th line, replace "0,4" with "0.4". In claim 20, 1st line, delete either "characterized by" or "comprising". In claim 23, 2nd line, delete either "characterized by" or "comprising". Appropriate correction is required.

Claim Rejections - 35 USC § 112

- 6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

 The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
- 7. Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claims 1-12, these method claims are generally written in a narrative format, rendering the claims indefinite. These method claims should be written to distinctly set forth positive, active process steps.

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A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claim 1 recites the broad recitation "a value", and the claim also recites "preferably between 0.5 and 5.0 mm at each side" which is the narrower statement of the range/limitation.

Claim 3 recites the broad recitation "separated crosswise", and the claim also recites "preferably cut" which is the narrower statement of the range/limitation.

Claim 6 recites the broad recitation "a minimum of...(AC1)", and the claim also recites "preferably a maximum of...(AC3)" which is the narrower statement of the range/limitation.

Claim 13 recites the broad recitation "a roughing mill (5)...further comprising" (lines 5-11 of claim 13), and the claim also recites "in particular: a roller table (3)...at

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least three" (line 12-last line of claim 13) which is the narrower statement of the range/limitation.

Claim 15 recites the broad recitation "a device for transverse cutting (10)", and the claim also recites "preferably a shearing device" which is the narrower statement of the range/limitation.

Claim 19 recites the broad recitation "a coiling station (19)", and the claim also recites "preferably a carousel coiler" which is the narrower statement of the range/limitation.

Claim 1 recites the limitations "the mould", "the slab thickness", "the liquid steel core reduction step (3B)", "the front side and the back side", "the head and tail", "the finished strip", "the hot rolled strip", "the exit", "the strip (13)", "the final rolling (18)", "the corresponding T.T.T. diagram (14.1)", and "the steel quality". There is insufficient antecedent basis for these limitations in the claim.

The term "relatively" in claim 2 is a relative term which renders the claim indefinite. The term "relatively" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

With regard to claim 3, the phrase "can be" is indefinite, as "can be" recites an optional function of being "separated". It is suggested to replace "can be" with "is" to more distinctly define this limitation in the claim.

Claim 4 recites the limitation "the possible separation (10)". There is insufficient antecedent basis for this limitation in the claim.

With regard to claim 5, the phrase "can be" is indefinite, as "can be" recites an optional function of being "directly guided". It is suggested to replace "can be" with "is" to more distinctly define this limitation in the claim.

Claim 5 recites the limitations "the final rolling" and "the temperature regulation".

There is insufficient antecedent basis for these limitations in the claim.

With regard to claim 6, the phrase "can be" is indefinite, as "can be" recites an optional function of being "rolled". It is suggested to replace "can be" with "is" to more distinctly define this limitation in the claim.

Claim 6 recites the limitations "the exit" and "the last pass". There is insufficient antecedent basis for these limitations in the claim.

With regard to claim 7, the phrase "can enter" is indefinite, as "can enter" recites an optional function of "entering". It is suggested to replace "can enter" with "enters" to more distinctly define this limitation in the claim.

Claim 7 recites the limitation "the finishing mill (18)". There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitations "the last rolling pass", "the finished hot rolled strip (13)", and "the T.T.T. diagram (14.1)". There is insufficient antecedent basis for these limitations in the claim.

With regard to claim 8, the phrase "can be" is indefinite, as "can be" recites an optional function of being "brought". It is suggested to replace "can be" with "is" to more distinctly define this limitation in the claim.

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Claim 8 recites the limitations "the last rolling pass", "the finished hot rolled strip (13)", and "the T.T.T. diagram (14.1)". There is insufficient antecedent basis for these limitations in the claim.

With regard to claim 9, the phrase "thanks to" is indefinite, as "thanks to" does not clearly recite the "cooling strategy". It is suggested to replace "thanks to" with "via" to more distinctly define this limitation in the claim.

Claim 9 recites the limitations "the thermally controlled management (14)", "the hot finished strip (13)", "the corresponding T.T.T. diagram (14.1)", "the desired structures and properties of the material", "the desired steel quality (23)", and "the last rolling pass". There is insufficient antecedent basis for these limitations in the claim.

Claim 10 recites the limitation "the desired properties of the material". There is insufficient antecedent basis for this limitation in the claim.

Claim 11 recites the limitation "the desired material properties". There is insufficient antecedent basis for this limitation in the claim.

With regard to claim 11, the phrase "can be" is indefinite, as "can be" recites an optional function of being "directly brought". It is suggested to replace "can be" with "is" to more distinctly define this limitation in the claim.

Claim 12 recites the limitations "the steel type", "the T.T.T. diagram (14.1)", and "the whole process". There is insufficient antecedent basis for these limitations in the claim.

The term "as high as possible" in claim 13 is a relative phrase which renders the claim indefinite. The phrase "as high as possible" is not defined by the claim, the

specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

With regard to claim 13, the phrase "means specific algorithm" is indefinite, as it is unclear what the "means specific algorithm" is, or how it operates.

Claim 13 recites the limitations "the mould exit", "the slab (3.1) thickness", "the furnace exit", "the overheating", and "the head and tail". There is insufficient antecedent basis for these limitations in the claim.

Claim 20 recites the limitation "the whole production line". There is insufficient antecedent basis for this limitation in the claim.

Claim 21 recites the limitation "the cooling lines (19.1; 20.1)". There is insufficient antecedent basis for this limitation in the claim. In this instance, it is suggested to replace "the cooling lines (19.1; 20.1)" with "the cooling line (19.1)".

With regard to claim 21, the phrase "can be" is indefinite, as "can be" recites an optional function of being "equipped". It is suggested to replace "can be" with "is" to more distinctly define this limitation in the claim.

Claim 22 recites the limitations "the hot rolled strip", "the time (14)", and "the subsequent working line". There is insufficient antecedent basis for these limitations in the claim.

Claim 23 recites the limitation "the whole production". There is insufficient antecedent basis for this limitation in the claim.

Claim 24 recites the limitations "the outside", "the programming central computer system", and "the steel quality", "the T.T.T. diagram (14.1)", "the exit temperature", and "the range AC3/AC1 (24)". There is insufficient antecedent basis for these limitations in the claim.

Regarding claim 24, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 103

- 8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:
 - (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 9. Claims 1-24 insofar as definite (in view of the 35 USC 112, 2nd paragraph rejections) are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al. (US 5,634,257) in view of Reynolds et al. (GB 2 327 375), and further in view of Arvedi (WO 00/59650).

Kajiwara et al. disclose a hot strip rolling plant and method combined for continuous casting, in which the plant (production line) and method enables continuous production of ultrathin hot rolled steel strip (1.6-15 mm – column 10, lines 60-65) from a thin slab obtained from continuous casting in a continuous casting mold corresponding

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to a strip width of 1.524 m, or less than 2.2 m (see Figures 2A and 2B), and a strip thickness of 70 mm at the mold exit, such that the plant (continuous casting machine 1 of Figures 1 and 3 that is provided with reducing rollers operating at casting speeds of at least 10 m/min) and its method of use include the following steps: providing a continuous casting step to cast a slab 2; providing a pre-transformation (roughing after slab solidification) step subsequent to continuous casting of the slab (which has a surface temperature of about 1200°C to obtain an intermediate strip) via a roughing mill 7 having four rolling stands; providing a crop shearing means 8 (cutting means) immediately after the roughing mill 7; providing induction heating via induction heater 9 to regulate temperatures in the range of 1050 to 1200°C; providing a descaling apparatus 11 after the induction heater 9 path to eliminate scale from the surface of the intermediate strip; providing a final transformation step via finishing mills (19,20,21) each having six rolling stands, with at least one of the finishing mills including a roll bending apparatus (column 7, lines 17-28) that is operable to control the strip crown, thus providing a crowned shape to the cross-section of the slab; providing a transfer table 28 (transportation device) downstream of the cutting means; and providing a cooling station 22 and a coiling station in the form of a carousel coiler 14 (downcoiler station) after the finishing mills (19,20,21), such that the cooling station 22 enables controlled cooling of the strip between the final transformation step and coiling step (abstract; column 2, line 63 through column 5 line 58; column 6, line 33 through column 8, line 33; column 10, line 15 through column 15, line 50; column 17, line 44 through column 20, line 18; and Figures 1 and 3). Kajiwara et al. do not specifically disclose the

use of a secondary spray cooling system, a plastic stretching device, and a process control system.

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However, Reynolds et al. disclose a continuous metal manufacturing method and apparatus for producing rolled thin strip, in which the method and apparatus include providing a control system 30 having a variety of process subsystems with sensors 36 that measure several strip and roller parameters, and a secondary spray cooling system that includes (in addition to water/air cooling stage 11) an additional cooling stage 18 and cooling sprays at a secondary cooling stage 43, such that the control system and secondary spray cooling system are advantageous for improving production and controlling the properties of the rolled thin strip, including roll crown profile and strip thickness, while allowing transformation of steel from the austenitic phase to the ferritic phase (abstract; page 2, lines 16-37; page 3, lines 1-3 and 20-36; page 4, lines 1-18 and 34-36; page 5, line 1 through page 9, line 26; and Figures 1-3).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the hot strip rolling plant and method combined for continuous casting, in which the plant (production line) and method enables continuous production of ultrathin hot rolled steel strip, as disclosed by Kajiwara et al., by using a secondary spray cooling system and a process control system, as taught by Reynolds et al., in order to improve production by controlling the properties of the rolled thin strip, including roll crown profile and strip thickness, while allowing transformation of steel from the austenitic phase to the ferritic phase (Reynolds et al.;

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page 2, lines 20-26; page 3, lines 31-36; page 4, lines 1-18; page 7, lines 7-25; and page 9, lines 16-23).

Neither Kajiwara et al. nor Reynolds et al. specifically discloses the plastic stretching device.

However, Arvedi discloses an integrated continuous casting and in-line hot rolling process for production of ultrathin coils, in which the process includes providing a plastic stretching device 12 for enabling plastic stretching of the ultrathin coils, in which the plastic stretching device is advantageous for facilitating the elimination of scale in the subsequent descaling step (abstract; page 3, lines 3-9; page 4, lines 3-26; page 6, lines 17-22; page 7, lines 9-16; and Figures 1, 1a, and 2a).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the hot strip rolling plant and method combined for continuous casting, in which the plant (production line) and method enables continuous production of ultrathin hot rolled steel strip, as disclosed by Kajiwara et al., by using a secondary spray cooling system and a process control system, as taught by Reynolds et al., in order to improve production by controlling the properties of the rolled thin strip, including roll crown profile and strip thickness, while allowing transformation of steel from the austenitic phase to the ferritic phase, and by further using the plastic stretching device, as disclosed by Arvedi, in order to facilitate the elimination of scale in the subsequent descaling step (Arvedi; page 4, lines 10-13 and 21-26; and page 6, lines 17-22).

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Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 6,511,557 and US 6,616,778 are also cited in PTO-892.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kevin P. Kerns whose telephone number is (571) 272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin P. Kerns Kirin ferns 3/23/67 Primary Examiner

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